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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/750,733      | 12/31/2003  | Arthur O. Miller     | 5466.002/DIV/CDQ    | 1856             |

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| EXAMINER |
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SAEED, USMAAN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2166

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/750,733             | MILLER ET AL.       |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Usmaan Saeed           | 2166                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 26-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 34 and 35 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - Group I. Claims 26-33, drawn to a method/apparatus for storing data in data comparitors, classified in class 707, subclass 205.
  - Group II. Claims 34-35, drawn to a method for storing/retrieving data based on identified location and industry, classified in class 707, subclass 2.

The inventions are distinct, each from the other because of the following reasons:

Inventions I - II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, each of the respective inventions has a separate utility as in a system not having the others. See M.P.E.P. § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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Because these inventions are distinct for the reasons given above and the search required for group I is not required for the other groups, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is advised that the response to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed.

During a telephone conversation with Mr. Quisenberry on 07/26/2006 a provisional election was made without traverse to prosecute the invention of group I, claims 26-33. Affirmation of this election must be made by applicant in replying to this Office action. Claims 34-35 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

2. Claims 26-33 are pending in this office action.

***Claim Rejections - 35 USC § 101***

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3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 26-27 are rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. The language of the claims raises a question as to whether the claims are directed merely to an environment or machine which would result in a practical application producing a concrete useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

Claims 26-27 are rejected because the claims do not recite a practical application by producing a physical transformation or producing a useful, concrete, and tangible results. To perform a physical transformation, the claimed invention must transform an article of physical object into a different state or thing. Transformation of data is not a physical transformation. A useful, concrete, and tangible results must be either specifically recited in the claim or flow inherently therefrom. To be useful the claimed invention must establish a specific, substantial, and credible utility. To be concrete the claimed invention must be able to produce reproducible results. To be tangible the claimed invention must produce must produce a practical application or real world result.

To expedite a complete examination of the instant application the claims rejected under U.S.C. 101 (nonstatutory) above are further rejected as set forth below in anticipation of application amending these claims to place them within the four categories of invention.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 26 recites the limitation "data comparitors" and "a comparator." There is insufficient antecedent basis for this limitation (a comparator) in the claim since examiner assumes "comparator" and "comparator" have same meaning.

***Specification***

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The specification does not disclose comparator which is discussed in claim 26.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26-27 are rejected under 35 U.S.C 103(a) as being unpatentable over **Dean A. Klein. (Klein hereinafter)** (U.S. Patent No. 6,658,552) in view of **David L. Simpson. (Simpson hereinafter)** (U.S. Patent No. 5,267,191).

With respect to claim 26, **Klein teaches a method of operating an electronic switch comprising:**

**“receiving a plurality of data objects”** as a cache memory system may comprise a data memory configured to hold cache lines comprising a plurality of bytes of data and a plurality of comparators (**Klein Col 2, Lines 51-54**).

**“storing the data object in a plurality of data comparitors”** as wherein each comparator has a first input coupled to the data memory such that each comparator receives one of the plurality of bytes of data via its associated first input, and wherein each comparator has a second input coupled to a second data source (**Klein Col 2, Lines 54-58**).

**“receiving an additional data object”** as the instruction register 58 may be configured as a multi-instruction buffer so that a series of data string instructions can be queued in the memory controller 40 (**Klein Col 6, Lines 55-58**).

**“providing a holding area for data objects”** as the instruction register 58 may be configured as a multi-instruction buffer so that a series of data string instructions can be queued in the memory controller 40 (**Klein Col 6, Lines 55-58**).

**“storing the additional data object in the holding area”** as the instruction register 58 may be configured as a multi-instruction buffer so that a series of data string instructions can be queued in the memory controller 40 (**Klein** Col 6, Lines 55-58).

**“and storing the additional data object in the comparator”** as a set of data buffers 56 temporarily store data as it passes through the memory controller circuit (**Klein** Col 3, Lines 47-49).

**Klein** teaches the elements of claim 26 as noted above but does not explicitly disclose **“receiving a first signal indicating that all of the comparitors are busy,” “receiving a second signal indicating that a comparator is free”** and **“and storing the additional data object in the comparator.”**

However, **Simpson** discloses **“receiving a first signal indicating that all of the comparitors are busy,” “receiving a second signal indicating that a comparator is free”** and **“and storing the additional data object in the comparator”** as in data processing systems it is frequently necessary to buffer or temporarily hold data being transferred within or outside of the system. The need to buffer data may arise because the receiver is busy when the data is transferred, or because the transfer rates of the transmitter and receiver are different. Whatever the reason, the data must be recovered from the buffer in the order it is transmitted. This process is known as first-in, first-out (FIFO) (**Simpson** Col 1, Lines 9-17). Means to keep track of the status of the FIFO, namely, whether it is empty or full, and to generate signals when the FIFO is at the empty or full state. Such means may include write and read pointers and a comparator (**Simpson** Col 1, Lines 18-22). In addition to empty and full signals, some comparators



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also generate another signal indicating a predetermined amount of data has been stored in the buffer (**Simpson** Col 1, Lines 30-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Simpson's** teachings would have allowed **Klein** to provide glitch free signal and to provide asynchronous read and write operation for more efficient data transfers (**Simpson** Col 1, Lines 59-64).

Claim 27 is same as claim 26 and is rejected for the same reason as applied hereinabove.

7. Claims 28, 30-33 are rejected under 35 U.S.C 103(a) as being unpatentable over **William A. Hughes** (**Hughes** hereinafter) (U.S. Patent No. 6,662,280) in view of **David L. Simpson**. (U.S. Patent No. 5,267,191).

With respect to claim 28, **Hughes** teaches an **apparatus for storing data in a data warehouse, comprising:**

**"a data receiver that receives a data object"** as store queue 400 may comprise multiple entries. For example, entries 408A and 408B are illustrated in FIG. 1, and store queue 400 may include additional entries (not shown) (**Hughes** Col 5, Lines 17-20).

**“a plurality of comparitors, each for indexing a received data object for storage in the data warehouse”** as comparator 404 compares the load and store indexes and, if a match is detected, asserts a signal to hit control circuit 402 (**Hughes** Col 5, Lines 56-58). Comparator 406 is shown for comparing the way indications stored in store queue 400 to the load's way indication, an alternative embodiment may read the way indication from an entry used to forward data for a load (where the forwarding is based on the index comparison and the store hitting in the data cache) (**Hughes** Col 7, Lines 28-34). Accordingly, comparators such as comparators 102 are provided. Comparators 102 are provided to compare addresses and way indications on each port of data cache 28 to the data addresses and way indications stored within LS2 buffer 62 (**Hughes** Col 22, Lines 66-67 & Col 23, Lines 1-3). More particularly, comparator 102AA compares the index portion of the data address on port 0 to the index in address--index field 96C (**Hughes** Col 24, Lines 24-26).

**“and a holding file that temporarily holds a data object when the comparitors are not available for indexing”** as store queue 400 may receive information corresponding to a store upon execution of the store, and may retain the information until after the store is retired and committed to the data cache and/or memory (**Hughes** Col 5, Lines 21-25).

**Hughes** teaches the elements of claim 28 as noted above but does not explicitly disclose **“a busy transfer switch that determines if any of the comparitors is available for indexing a data object”** and **“comparitors not available for indexing.”**

However, **Simpson** discloses “a busy transfer switch that determines if any of the comparitors is available for indexing a data object” and “comparitors not available for indexing” as in data processing systems it is frequently necessary to buffer or temporarily hold data being transferred within or outside of the system. The need to buffer data may arise because the receiver is busy when the data is transferred, or because the transfer rates of the transmitter and receiver are different. Whatever the reason, the data must be recovered from the buffer in the order it is transmitted. This process is known as first-in, first-out (FIFO) (**Simpson** Col 1, Lines 9-17). Means to keep track of the status of the FIFO, namely, whether it is empty or full, and to generate signals when the FIFO is at the empty or full state. Such means may include write and read pointers and a comparator (**Simpson** Col 1, Lines 18-22). In addition to empty and full signals, some comparators also generate another signal indicating a predetermined amount of data has been stored in the buffer (**Simpson** Col 1, Lines 30-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Simpson's** teachings would have allowed **Hughes** to provide glitch free signal and to provide asynchronous read and write operation for more efficient data transfers (**Simpson** Col 1, Lines 59-64).

With respect to claim 30, **Hughes** does not explicitly teaches **“a sensing device, associated with the comparitors, for sending a signal to the busy transfer switch indicating that the comparitors are not available for indexing.”**

However, **Simpson** discloses **“a sensing device, associated with the comparitors, for sending a signal to the busy transfer switch indicating that the comparitors are not available for indexing”** as means to keep track of the status of the FIFO, namely, whether it is empty or full, and to generate signals when the FIFO is at the empty or full state. Such means may include write and read pointers and a comparator (**Simpson** Col 1, Lines 18-22). In addition to empty and full signals, some comparators also generate another signal indicating a predetermined amount of data has been stored in the buffer (**Simpson** Col 1, Lines 30-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Simpson’s** teachings would have allowed **Hughes** to provide glitch free signal and to provide asynchronous read and write operation for more efficient data transfers (**Simpson** Col 1, Lines 59-64).

With respect to claim 31, **Hughes** teaches **“directs the received data object to the holding file”** as store queue 400 may receive information corresponding to a store upon execution of the store, and may retain the information until after the store is retired and committed to the data cache and/or memory (**Hughes** Col 5, Lines 21-25).

**Hughes** teaches the elements of claim 31 as noted above but does not explicitly disclose “**the busy transfer switch receives the signal from the sensing device.**”

However, **Simpson** discloses “**the busy transfer switch receives the signal from the sensing device**” as in data processing systems it is frequently necessary to buffer or temporarily hold data being transferred within or outside of the system. The need to buffer data may arise because the receiver is busy when the data is transferred, or because the transfer rates of the transmitter and receiver are different. Whatever the reason, the data must be recovered from the buffer in the order it is transmitted. This process is known as first-in, first-out (FIFO) (**Simpson** Col 1, Lines 9-17). In addition to empty and full signals, some comparators also generate another signal indicating a predetermined amount of data has been stored in the buffer (**Simpson** Col 1, Lines 30-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Simpson’s** teachings would have allowed **Hughes** to provide glitch free signal and to provide asynchronous read and write operation for more efficient data transfers (**Simpson** Col 1, Lines 59-64).

With respect to claim 32, **Hughes** teaches “**comparator for indexing**” as comparator 404 compares the load and store indexes and, if a match is detected, asserts a signal to hit control circuit 402 (**Hughes** Col 5, Lines 56-58). Comparator 406 is shown for comparing the way indications stored in store queue 400 to the load's way

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indication, an alternative embodiment may read the way indication from an entry used to forward data for a load (where the forwarding is based on the index comparison and the store hitting in the data cache) (**Hughes** Col 7, Lines 28-34). Accordingly, comparators such as comparators 102 are provided. Comparators 102 are provided to compare addresses and way indications on each port of data cache 28 to the data addresses and way indications stored within LS2 buffer 62 (**Hughes** Col 22, Lines 66-67 & Col 23, Lines 1-3). More particularly, comparator 102AA compares the index portion of the data address on port 0 to the index in address--index field 96C (**Hughes** Col 24, Lines 24-26).

**Hughes** teaches the elements of claim 32 as noted above but does not explicitly teaches **“wherein the sensing device sends a second signal to the busy transfer switch indicating the availability.”**

However, **Simpson** teaches **“wherein the sensing device sends a second signal to the busy transfer switch indicating the availability”** as in data processing systems it is frequently necessary to buffer or temporarily hold data being transferred within or outside of the system. The need to buffer data may arise because the receiver is busy when the data is transferred, or because the transfer rates of the transmitter and receiver are different. Whatever the reason, the data must be recovered from the buffer in the order it is transmitted. This process is known as first-in, first-out (FIFO) (**Simpson** Col 1, Lines 9-17). Means to keep track of the status of the FIFO, namely, whether it is empty or full, and to generate signals when the FIFO is at the empty or full state. Such means may include write and read pointers and a comparator (**Simpson**

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Col 1, Lines 18-22). In addition to empty and full signals, some comparators also generate another signal indicating a predetermined amount of data has been stored in the buffer (**Simpson** Col 1, Lines 30-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Simpson's** teachings would have allowed **Hughes** to provide glitch free signal and to provide asynchronous read and write operation for more efficient data transfers (**Simpson** Col 1, Lines 59-64).

With respect to claim 33, **Hughes** teaches "**wherein the busy transfer switch directs that the data object in the holding file to the comparator available for indexing**" as comparator 404 is coupled to receive the store index from each entry in store queue 400 and is coupled to receive the load index of a load being executed (**Hughes** Col 5, Lines 54-56).

**Hughes** teaches the elements of claim 33 as noted above but does not include "**busy transfer signal switch.**"

However, **Simpson** discloses "**busy transfer signal switch**" as in data processing systems it is frequently necessary to buffer or temporarily hold data being transferred within or outside of the system. The need to buffer data may arise because the receiver is busy when the data is transferred, or because the transfer rates of the transmitter and receiver are different. Whatever the reason, the data must be recovered from the buffer in the order it is transmitted. This process is known as first-in, first-out

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(FIFO) (**Simpson** Col 1, Lines 9-17). Means to keep track of the status of the FIFO, namely, whether it is empty or full, and to generate signals when the FIFO is at the empty or full state. Such means may include write and read pointers and a comparator (**Simpson** Col 1, Lines 18-22). In addition to empty and full signals, some comparators also generate another signal indicating a predetermined amount of data has been stored in the buffer (**Simpson** Col 1, Lines 30-32).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Simpson's** teachings would have allowed **Hughes** to provide glitch free signal and to provide asynchronous read and write operation for more efficient data transfers (**Simpson** Col 1, Lines 59-64).

8. Claim 29 is rejected under 35 U.S.C 103(a) as being unpatentable over **William A. Hughes** (**Hughes** hereinafter) (U.S. Patent No. 6,662,280) in view of **David L. Simpson**. (U.S. Patent No. 5,267,191) as applied to claims 28, 30-33 further in view of **Fukuzawa et al.** (**Fukuzawa** hereinafter) (U.S. Patent No. 5,247,620).

With respect to claim 29, **Hughes and Simpson** do not explicitly teach “a polling unit that searches for a data object to be stored in the data warehouse.”

However, **Fukuzawa** discloses “a polling unit that searches for a data object to be stored in the data warehouse” as a third technique in which a string search device is used for the address storage table, all the processings of



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search/comparison/deletion/registration are executed by means of hardwares. In this case, since comparison among a plurality of entries is executed successively with one comparator (**Fukuzawa** Col 2, Lines 8-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the cited references because **Fukuzawa's** teachings would have allowed **Hughes and Simpson** to provide reduction of unnecessary traffic by searching and filtering for only the necessary data.

### ***Conclusion***

9. The prior art made of record and not replied upon is considered pertinent to applicant's disclosure is listed on 892 form.

### ***Contact Information***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usmaan Saeed whose telephone number is (571)272-4046. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571)272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Usmaan Saeed  
Patent Examiner  
Art Unit: 2166



Leslie Wong  
Primary Examiner

US  
August 01, 2006